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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

Division of Mycology and Disease Survey

BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING

AGRICULTURAL RESEARCH ADMINISTRATION

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY
DIVISION OF MYCOLOGY AND DISEASE SURVEY

Plant Industry Station March 15, 1946 Beltsville, Maryland

Volume 30 Number 3

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CHECK LIST REVISION

Freeman Weiss

PHASEOLUS (LEGUMINOSAE)

PHASEOLUS ACUTIFOLIUS A. Gray, TEPARY BEAN. Annual, native of Mexico and southwestern U.S., grown for edible seeds (especially the var. LATIFOLIUS Freeman) by the aborigenes.

Erysiphe polygoni DC., powdery mildew. Calif.
Fusarium solani (Mart.) App. & Wr. f. phaseoli (Burk.) Snyder & Hansen, root rot. Calif.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.
Sclerotium rolfsii Sacc., southern blight. Ala.
Uromyces phaseoli (Pers.) Wint. (II,III), rust. Calif., Tex. Presumably the var. typica Arth.

Curly top -- virus (Chlorogenus eutetticola Holmes, Beta virus 1 K. M. Sm.). Tex.

PHASEOLUS ADENANTHUS G.F.W.Meyer. Annual vine of tropical America.

Cercospora phaseolorum Cke., leaf spot. P.R.
Erysiphe polygoni DC., powdery mildew. P.R.
Phyllachora phaseoli (P.Henn.) Theiss. & Syd., tar spot. P.R.
Parodiella perisporioides (Berk. & Curt.) Speg., on leaves. P.R.
Uromyces phaseoli (Pers.) Wint. (II,III, ? O,I), rust. P.R.

PHASEOLUS ANGULARIS (Willd.) W.F.Wight, ADZUKI BEAN. Annual of Asia, grown for edible seeds, occasionally so used in the U.S. to furnish sprouts.

Aristastoma oeconomicum (Ell. & Tracy) Tehon, leaf spot. Va.
Fusarium oxysporum Schlecht. f. vasinfectum (E.F.Sm.) Snyder & Hansen, wilt. Ala.
F. solani (Mart.) App. & Wr. f. phaseoli (Burk.) Snyder & Hansen, root rot. N.Y.
Heterodera marioni (Cornu) Goodey, root knot. Hawaii.
Rhizoctonia solani Kuehn, root rot. Ill.
Uromyces phaseoli (Pers.) Wint. var. typica Arth. (II,III, ? O,I), rust. Ind.
Xanthomonas phaseoli (E.F.Sm.) Dowson, bacterial blight. Ind., Mich.

PHASEOLUS AUREUS Roxb., MUNG BEAN. Annual of tropical Asia, grown to a very limited extent in the U.S., chiefly in the Southwest, for the seeds which are used to furnish green sprouts.

Cercospora canescens Ell. & G.Martin (? C. cruenta Sacc.), leaf

spot. Miss., Va.
Corynebacterium flaccumfaciens (Hedges) Dowson, bacterial wilt. Mich., N.Y.
Erysiphe polygoni DC., powdery mildew. Calif., Okla.
Fusarium sp., wilt. N.Car.
Heterodera marioni (Cornu) Goodey, root knot. Ariz., Okla.
Macrophomina phaseoli (Maub.) Ashby, charcoal rot. Calif., Okla.
Nematospora coryli Pegl., yeast spot. Okla.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.
Pythium arrhenomanes Drechs., root rot. Calif., Hawaii. P. rostratum Butl. and P. ultimum Trow also reported associated with seedling blight in Calif.
Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Va.
Sclerotium rolfsii Sacc., southern blight. Okla.
Xanthomonas phaseoli (E.F.Sm.) Dowson, bacterial blight. Ill., Ind., Mich., Okla.

Mosaic -- virus (Marmor phaseoli Holmes, Phaseolus virus 1 K.M. Sm.) Ill., Ind., Okla.

PHASEOLUS COCCINEUS L., SCARLET RUNNER BEAN. Perennial of tropical America, usually grown as an annual for ornament or sometimes for edible seeds.

Ascochyta boltshauseri Sacc., leaf spot. Oreg.
Cercospora cruenta Sacc., leaf spot. Ala.
Colletotrichum lindemuthianum (Sacc. & Magn.) Briosi & Cav., anthracnose. N.Y.
Erysiphe polygoni DC., powdery mildew. Calif.
Fusarium solani (Mart.) App. & Wr. f. phaseoli (Burk.) Snyder & Hansen, root rot. N.Y.
Pseudomonas phaseolicola (Burkh.) Dowson, halo blight. N.Y.
Uromyces phaseoli (Pers.) Wint. var. typica Arth. (II,III, ? O,I), rust. Ala., Mass., N.H.
Xanthomonas phaseoli (E.F.Sm.) Dowson, bacterial blight. Ind., N.J., Tex.

Mosaic -- virus (? Marmor phaseoli Holmes, Phaseolus virus 1 K.M. Sm.). Ariz., Ind., Mich. Identification as this virus is based partly on artificial inoculation and partly on seed transmission.

PHASEOLUS LIMENSIS Macf., LIMA BEAN, and P. LUNATUS L., SIEVA B. The former is frequently designated P. lunatus var. macrocarpus Benth., and the two types as respectively the large-seeded and small-seeded lima beans. Since this distinction has not been consistently maintained and since some horticultural varieties are hybrids, the records for the two spp. are here merged. P. limensis is perennial, P. lunatus annual, but both are grown as annuals and both contain bush and vine types. Natives of tropical America; widely cult. for green beans, especially in

the Middle Atlantic, East Central, and Southeastern States; in California for dry beans.

Achromobacter lipolyticum (Huss) Bergey et al., "stickiness" of green beans. Fla.

Alternaria spo., leaf and pod spot (secondary). Ky., Md., N.J., N.Y., Pa., Va.; probably general. A. brassicae (Berk.) Sacc. f. phaseoli Brun. reported in Md. and Ga.; most reports as A. sp. or A. tenuis Nees ex Wallr.

Ascochyta boltshauseri Sacc., leaf and pod spot. N.Car., ? Md., Pa.

Bacillus coadunatus Wright, "stickiness" of green beans, Calif.

Botrytis cinerea Pers. ex Fr., gray-mold blight. Calif. Cosmopolitan cause of decay of market beans.

Cercospora canescens Ell. & G.Martin (? C. cruenta Sacc., (Mycosphaerella c. (Sacc.) Latham), leaf spot, sometimes on pods. Southeastern States to N.Y., Kans. and Tex.; P.R.

Cladosporium herbarum Pers. ex Fr., spotting of pods and seed. Calif., Fla., Ga., Md., N.J., Va.

Colletotrichum lindemuthianum (Sacc. & Magn.) Briosi & Cav., anthracnose. Occasional in Eastern and Southern States from N.Y. to Fla., La. and Kans.; P.R.

C. truncatum Andrus & W.D.Moore, stem anthracnose, russetting of pods. Pa. to Ala. and Tex.

Corticium microsclerotia (Matz) Weber, web blight. Fla. See also Pellicularia filamentosa.

(C. solani (Prill. & Del.) Bourdot & Galzin): Pellicularia filamentosa.

Corynebacterium flaccumfaciens (Hedges) Dowson, bacterial wilt. Ill.

Diaporthe phaseolorum (Cke. & Ell.) Sacc., pod blight, leaf spot. Conn. to Fla., La., Okla. and Ohio.; P.R.

D. sojae Lehman, on stems. Ga.

Elsinoë phaseoli Jenkins, scab, pod spot. P.R.

Epicoccum sp. (E. duriaeanum Mont., E. neglectum Desm.), leaf spot (secondary). Md., N.J.

Erwinia carotovora (L.R.Jones) Holland, slimy soft rot of market beans. Occasional.

E. lathyri (Manns & Taub.) Magrou, streak (stem spot). Del.

Erysiphe polygoni DC., powdery mildew. Calif., Conn., Fla., Iowa, N.J., N.Y., Va., P.R.

Fusarium solani (Mart.) App. & Wr. f. phaseoli (Burk.) Snyder & Hansen, root rot. Calif., Ill., Md., Miss., N.Y., Ohio, Pa., Tex., Va., W.Va., P.R. This or perhaps other spp. of Fusarium also reported as causing seed decay and seedling blight in Fla., seed stain or pod rot in Calif., Ill., Ind., and Pa.

Heterodera marioni (Cornu) Goodey, root knot. Ark., Calif., Fla., Ga., N.Car., Tex.

Heterosporium sp., sooty spot. On old leaves, occasional in humid regions.

Phaseolus cont.

Isariopsis griseola Sacc., angular leaf spot. P.R.

Macrophomina phaseoli (Maub.) Ashby (Sclerotium bataticola Taub.), ashy stem blight, charcoal rot. Calif., Ga., N.&S.Car., Okla., Tex.

Microsphaera diffusa Cke. & Pk., powdery mildew. Md., Ill.

M. euphorbiae (Pk.) Berk. & Curt., powdery mildew. Ind.

Nematospora phaseoli Wingard (= N. coryli Pegl. ?), yeast spot, stigmatomycosis. Chiefly in the Southeastern States from Md. to Ala. and Tenn., also in Calif., Ill. and P.R. Follows injury by insects (Nezara viridula). Small-seeded type especially susceptible.

Parodiella perisporioides (Berk. & Curt.) Speg., black mildew. P.R.

Pellicularia filamentosa (Pat.) Rogers. Basidial stage of Rhizoctonia solani, q.v. for stem canker and soil rot. Corticium (Rhizoctonia) microsclerotia may also be a synonym but is at least a distinct form from C. (Rhizoctonia) solani as usually identified on beans.

Phakopsora vignae (Bres.) Arth. (II,III), rust. P.R. O and I unknown.

Phoma subcircinata Ell. & Ev. (= Phomopsis). Conidial stage of Diaporthe phaseolorum.

P. terrestris Hansen, secondary root rot. Calif.

Phyllosticta phaseolina Sacc., leaf spot. Occasional, N.J. to Fla., Tex. and Mich.; P.R.

Phymatotrichum omnivorum (Shear) Dug., root rot. Ariz., Tex.

Phytophthora phaseoli Thax., downy mildew. Eastern and Central States, Vt. to Va.; Ky. and Ohio; Minn., P.R.

Pseudomonas ovalis (Ravenel) Chester, stickiness of seed. Va.

P. phaseolicola (Burkh.) Dowson, halo blight. Conn., Ga., Ill., Mass., N.Y., Va.

P. syringae v. Hall, bacterial leaf and pod spot, "soil rot" (pods). Eastern and Southern States from Mass. to Fla., Okla., and Wis.; P.R.

Pseudomonas tabaci (Wolf & Foster) Stapp, "wildfire", bacterial leaf spot. Mass., N.Car.

Pythium sp., rootlet rot. Md.

P. aphanidermatum (Edson) Fitz., wilt, soil rot. Calif.,

Rhizoctonia solani Kuehn, root rot, stem canker, "soil rot" (pods). General. Sterile stage of Pellicularia filamentosa.

Rhizopus stolonifer (Ehr. ex Fr.) Lind and R. tritici K. Saito, soft rot of market beans. Occasional.

Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Calif., Ind., N.Y. Watery soft rot of market beans.

(Sclerotium bataticola Taub.): Macrophomina phaseoli.

S. rolfsii Sacc., southern blight. Va. to Fla. and Miss.

Uromyces phaseoli (Pers.) Wint. var. typica Arth. (II,III, ? O,I), rust. Widespread but infrequent, Pa. to Miss., La. and Ohio; Calif., P.R.

Xanthomonas phaseoli (E.F.Sm.) Dowson, bacterial blight. General.

Big bud, phyllody -- ? virus, possibly Galla australiensis Holmes (Lycopersicon virus 5 K. M. Sm.) Ida., Oreg., Wash.

Phaseolus cont.

Curly top -- virus (Chlorogenus eutetticola Holmes, Beta virus 1 K.M.Sm.). Ariz., Calif., Ida., Oreg.

Mosaic -- virus (Marmor cucumeris var. phaseoli Holmes). Conn. to Ga., Tex. and Mo.; Ariz., Calif., P.R. Occurs chiefly on small-seeded type. A yellow mosaic, perhaps caused by a different virus, is reported from Tex.

Witches'-broom -- ? virus. Ariz.

Baldhead -- mechanical injury to seed crippling or destroying growing point. General, usually in low proportions depending chiefly on moisture content at time of threshing; more frequent in large-seeded type.

Blossom drop -- physiological, correlated with high temperature and low humidity and soil moisture. General.

PHASEOLUS MUNGO L., and P. RADIATUS L., URD, BLACKGRAM. Annuals of India, grown for edible seeds which are used as sprouts.

Aristastoma oeconomicum (Ell. & Tracy) Tehon, leaf spot. Va.

Cercospora cruenta Sacc., leaf spot. Ala., Miss., S.Car.

Erysiphe polygoni DC., powdery mildew. Va.

Heterodera marioni (Cornu) Goodey, root knot. Calif.

Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Va.

Xanthomonas phaseoli (E.F.Sm.) Dowson, bacterial blight. Ind., Va.

Mosaic -- virus (? Marmor phaseoli Holmes). Ind., Mich.

PHASEOLUS VULGARIS L., KIDNEY BEAN. Annual of probably tropical American origin, but present worldwide distribution, existing in numerous horticultural types and vars., including vine (pole) and dwarf (bush) types; cult. throughout the U.S. for green (snap) beans, in Mich. and N.Y., and in Calif., Colo., Ida., Mont., N.Mex. and Wyo. for dry beans.

Agrobacterium tumefaciens (E.F.Sm. & Town.) Conn., crown gall. Occasional in experimental cultures.

Alternaria sp. (usually as A. fasciculata (Cke. & Ell.) L.R.Jones & Grout = A. tenuis Nees ex Wallr.), leaf spot (secondary). Occasional in humid areas or seasons throughout the U.S., probably as a sequel to insect, spray, or other fungus injuries.

A. brassicae (Berk.) Sacc. f. phaseoli Brun., leaf spot. Ohio.

Aristastoma oeconomicum (Ell. & Tracy) Tehon, leaf spot. Ga.

Ascochyta boltshauseri Sacc., leaf spot. Oreg.

Bacterial blight. See Corynebacterium, Pseudomonas, and Xanthomonas.

Botrytis cinerea Pers. ex Fr., gray-mold shoot blight. Occasional in cool, humid areas and seasons, chiefly northern (Me., N.Y., Wash., Alaska), sometimes southern (Fla., La., Tex.) and western (Calif.); also causes gray-mold rot of market beans.

? Brachysporium pisi Oud. (perhaps a Curvularia) leaf spot. Alaska.

Phaseolus cont.

Cercospora canescens Ell. & G.Martin (? C. cruenta Sacc., (Mycosphaerella c. (Sacc.) Latham), leaf spot. Ala., Fla., Kans., Mo., N.J., Tex., P.R.

(C. columnaris Ell. & Ev.); Isariopsis griseola.

C. phaseoli Dearn. & Barth., leaf spot, Mo.

C. phaseolorum Cke., leaf spot. S.Car.

Cladosporium herbarum Pers. ex Fr. leaf spot (? secondary). Mont.

Colletotrichum lindemuthianum (Sacc. & Magn.) Briosi & Cav., anthracnose. General in the East, reported in the Western States but rarely found from the Rocky Mountains to the Pacific Coast.

C. truncatum (Schw.) Andrus & W.D.Moore, stem anthracnose. Va. to Ala. and Tex.

Corticium microsclerotia (Matz) Weber, web blight. Fla., La., Miss., N.&S.Car., P.R. See also Pellicularia filamentosa.

Corynebacterium flaccumfaciens (Hedges) Dowson, northern bacterial wilt. Northeastern States (Conn. to Va., Ohio and Mich.), occasional in the West (Wis. to Colo., Oreg. and Mont.)

Diaporthe sp., root rot (? secondary). Ala. D. arctii (Lasch) Nits., on stems. Ga.; D. sojae Lehman (? D. phaseolorum (Cke. & Ell.) Sacc.), on pods and stems. Ga.

Epicoccum neglectum Desm., secondary leaf spot. Md., Miss., N.J.

Erwinia carotovora (L.R.Jones) Holland, slimy soft rot of market beans. Cosmopolitan.

E. lathyri (Manns & Taub.) Magrou, streak (stem and leaf spot). Del. The specificity of this organism and its relation to the disease are doubtful: see also Colletotrichum truncatum and virus streak.

Erysiphe polygoni DC., powdery mildew. Eastern and Southern States to the Mississippi River; in the Southwest from Tex. to Calif.; occasional elsewhere in the West.

Fusarium oxysporum Schlecht. f. phaseoli Kendrick & Snyder, Fusarium yellows. Calif., Colo., Ida., Mont.

F. oxysporum f. vasinfectum (Atk.) Snyder & Hansen, associated with root decay and wilt. Ala., Fla.

F. solani (Mart.) App. & Wr. f. phaseoli (Burk.) Snyder & Hansen, dry root rot, stem rot, pod rot, wilt. General. This includes both F. martii App. & Wr. var. phaseoli Burk. (F. solani var. martii (App. & Wr.) Wr. f. 3 Snyder), and the variant distinguished as F. aduncisporum Weimer & Harter (= F. solani var. aduncisporum (Weimer & Harter) Wr.) Other forms of F. solani in this inclusive sense have been shown experimentally pathogenic to beans and may be responsible for some of the disease manifestations observed in nature.

Heterodera marioni (Cornu). Goodey, root knot. Me. to Fla., Tex., and Kans.; Ariz., Calif.

Heterosporium sp., sooty spot on leaves and pods. Occasional, in humid areas and seasons.

Isariopsis griseola Sacc., angular leaf spot. Me. to Fla., Tex., and Okla.; Hawaii, P.R.

I. laxa (Ell.) Sacc., leaf spot. Ind., N.J.

Phaseolus cont.

Leptosphaeria phaseolorum Ell.&Ev., on stems. N.J.

Macrophomina phaseoli (Maub.) Ashby, ashy stem blight, leaf spot, root rot. Southeastern and South Central States from Md. to Ga., Tex. and Colo.; Calif.

Microsphaera diffusa Cke. & Pk., powdery mildew. Md., Ga.

Mycosphaerella cruenta (Sacc.) Latham, leaf blotch. N.J. to Fla., Tex., and Ark.; Wis.

Nematospora phaseoli Wingard (? N. coryli Pegl.), yeast spot. P.R.

Parodiella perisporioides (Berk. & Curt.) Speg., black mildew. P.R.

Pellicularia filamentosa (Pat.) Rogers (Rhizoctonia solani Kuehn), root and stem rot, stem canker, soil rot of pods. General. Commonly occurs in the sterile stage; basidial stage reported on stems in Oreg., and as web blight (Corticium microsclerotia) in the Gulf States and P.R.

Phakopsora vignae (Bres.) Arth. (II,III), rust. P.R.

Phyllosticta phaseolina Sacc., leaf spot. N.Y. to Fla., Tex., and Ind.

Phymatotrichum omnivorum (Shear) Dug., root rot. Ariz., Okla., Tex.

Phytophthora parasitica Dast., stem rot, pod rot. P.R.

Pleospora herbarum (Pers. ex Fr.) Rab. (Stemphylium botryosum Wallr.)

Pratylenchus pratensis (De Man) Filip., root nematode. Tex.

Pseudomonas phaseolicola (Burkh.) Dowson (P. medicaginis Sackett var. phaseolicola (Burkh.) Stapp & Kotte), halo blight, grease spot, bacterial blight (in part). General, especially in the East and sometimes in the Rocky Mountain States; rare on the Pacific Coast.

P. solanacearum E.F.Sm., brown rot, southern bacterial wilt. Ala., Fla., Ga., Okla.

P. syringae v. Hall, bacterial brown spot. Conn., Fla., Ga., Md., N.J., N.Y., Pa.

Pythium aphanidermatum (Edson) Fitz. (P. butleri Subr.) Pythium wilt. Calif., Colo., Ida., N.Y., Okla., Va. Also causes "nesting" or cottony leak of market beans especially in shipments from the Southeastern States.

P. debaryanum Hesse, damping off, root rot, pod rot. Conn., Del., Fla., Ida., N.J., N.Y., Ohio, P.R.

P. helicoides Drechs., root rot. Fla.

P. rostratum Butl., root rot. Calif.

P. ultimum Trow, damping off, root rot. Calif.; probably also as Pythium sp. in La.

Rhizobium phaseoli Dangeard, in root nodules. General.

Rhizoctonia sp. (probably mostly R. solani Kuehn = Pellicularia filamentosa), seed rot, damping off, root rot, stem canker, soil rot (of pods). Cosmopolitan.

Rhizopus stolonifer (Ehr. ex Fr.) Lind. and R. tritici K. Saito, soft rot of market beans. Cosmopolitan.

Sclerotinia sclerotiorum (Lib.) DBy., Sclerotinia wilt, watery soft rot of market beans. General, especially in the South and

Phaseolus cont.

in irrigated districts in the West.

S. minor Jagger, S. intermedia Ramsey, and S. ricini Godfrey also have been isolated from market beans, in which all cause a similar decay.

(Sclerotium bataticola Taub.): Macrophomina phaseoli.

S. rolfsii Sacc., southern blight. Southern States Va. to Fla., Tex., and Ark.; Calif., P.R.

Stemphylium botryosum Wallr., leaf spot. Wash.

Stagonospora phaseoli Dearn., leaf spot. Tenn.

Thielaviopsis basicola (Berk. & Br.) Ferr., black root rot. Ala., Calif., N.H., N.J., N.Y.

Uromyces phaseoli (Pers.) Wint. var. typica Arth. (II,III), rust. General. O and I also on this host but rare.

Xanthomonas phaseoli (E.F.Sm.) Dowson, bacterial blight. General in the East, sometimes in the Rocky Mountain States, rare on the Pacific Coast.

X. phaseoli var. fuscans Starr & Burk., bacterial blight, seed spotting. N.Y., Wis.

Big bud, phyllody -- ? virus, possibly Galla australiensis Holmes (Lycopersicon virus 5 K.M.Sm.) Ariz., Ida., Oreg., Wash. This virus may be identical with Chlorogenus vaccinii Holmes (Vaccinium virus 1 K.M.Sm.)

Black root -- unidentified virus. Ga., ? Colo., Ida., Oreg.

Curly top, virus yellows -- Chlorogenus eutetticola Holmes (Ruga verrucosans Carsner & Bennett, Beta virus 1 K.M.Sm.) Rocky Mountain and Pacific Coast States Mont. to Tex., Calif., and Wash.

Mosaic, common -- Marmor phaseoli Holmes (Phaseolus virus 1 K.M. Sm.). General.

Mosaic, cucumber -- Marmor cucumeris Holmes, special strain. Wis.

Mosaic, southern -- Marmor laesiofaciens Zaumeyer & Harter. La., ? Miss. A closely related virus identified as m. l. var. minor is reported in Calif., Colo., Ida. and Md.

Mosaic, yellow -- Phaseolus virus 2 K.M.Sm. Colo., Fla., Ida., Md., N.Y., Oreg., Pa., Tex., Va., Wash., Wis., Wyo.; probably general. In addition to these naturally occurring viruses the following viruses causing mosaic symptoms are infective to beans by artificial inoculation: pea mottle virus (Marmor efficiens F.Johnson), pea wilt virus (Marmor repens F. Johnson), also complexes involving mixtures of these such as the viruses of alsike and white clover mosaic and perhaps pea streak.

Red node -- unidentified virus. Colo., Ida., Oreg., Wyo.

Ring spot, necrotic -- Marmor annularium McK., Nicotiana virus 12 K.M.Sm. Va. Besides the tobacco ring spot virus, the common tobacco mosaic and the alfalfa mosaic viruses may cause necrotic spotting of beans but have not been identified in natural infections.

Witches'-broom -- suspected virus. Ariz., Wash.

Phaseolus cont.

Baldhead (snakehead) -- mechanical injury to seed crippling or destroying growing point. General, usually in low proportions.

Blossom drop -- physiological, correlated with high temperature and low humidity and soil moisture. Occasional.

Chlorosis -- in part nutritional deficiencies, among which the following have been reported: copper, Fla.; magnesium, Fla., Mass., Miss., S.Car., Va.; manganese, Fla.; zinc, Fla. Chlorosis due to soil alkalinity is reported in Tex. and Utah and may occur in other Western States.

Variegation (one-sided mosaic) -- leaf abnormality of genetic origin, especially in the Idaho Refugee and related vars. Colo., Ida., Mont., N.Y., Tex., Wis., Wyo.

DIVISION OF MYCOLOGY AND DISEASE SURVEY

NOTE REGARDING DISTRIBUTION OF SEPARATES OF REVISED CHECK LIST

A set of the serial issues of the Revised Check List covering the Gramineae has been mailed to all persons whose names are on the mailing list for separates. Unfortunately, we were unable to supply complete sets in all cases owing to the exhaustion of our stock of separates, and also of the numbers of the Plant Disease Reporter that contained these sections. The omitted sections were in Vol. 27 (1943), nos. 5/6 (Mar. 15 - Apr. 1), 7/8 (Apr. 15 - May 1), and 9 (May 15) of the Reporter. As the stencils are not available for reprinting these sections, and we cannot provide the stenographic service necessary to duplicate them, there is no alternative to leaving these sets incomplete unless the deficiency can be made up by the return of these numbers of the Reporter from persons who do not keep a permanent file. If any who read this can spare these numbers, we shall welcome their return.

It should be noted again that the present form of the Revised Check List is only temporary, and it is expected that a complete printed volume can be issued when the preliminary compilation is finished.

SOME PSYCHOLOGICAL ASPECTS INVOLVED IN CONDUCTING PLANT DISEASE SURVEYS: PERSONAL BIAS A FACTOR TO BE RECKONED WITH IN ESTIMATING AND EVALUATING PLANT DISEASE LOSSES

Paul R. Miller

The singular experience of spending the greater part of the past fourteen years surveying extensively for diseases occurring on a variety of economic crops has led to some observations and conclusions that may be of interest to plant pathologists.

This article is presented with a degree of hesitancy because of its unorthodox nature. Also, certain comments may be subject to misinterpretation, owing to the fact that the subject matter is not usually dealt with by those interested in scientific work. The views expressed are an outgrowth or by-product of the surveys already referred to, results of which were published concurrently in the Plant Disease Reporter.

One of the biggest problems confronting one in conducting a plant disease reconnaissance is to be assured that fields selected for observation and study are representative of the area under consideration. Naturally, if the area to be surveyed is large, there will be many variations in factors that will influence the occurrence, distribution, prevalence, and severity of the disease or diseases under consideration. It is therefore necessary to break the region down into small units of similar character, or, in other words, to stratify the region. If the pathologist making the survey has not had experience with the region in which he is working he naturally turns to sources at hand for his preliminary information. These sources are local plant pathologists, county agents, other state or federal specialists, and the farmers themselves. The following remarks are based upon numerous contacts with these groups. While the points brought out may be interesting and probably are applicable to all surveys, they are not intended to suggest methods to be used in any particular survey.

Among growers there is always a small minority of scientifically minded men who see any disease situation clearly and who will record their observations accurately. These chosen few are invaluable to the surveyor because they are usually leaders in their community and can supply a rich background of practical experience pertaining to varietal resistance and susceptibility, soil types, prevailing weather conditions as compared with other seasons, and can give many other bits of pertinent information that aid in obtaining a more complete picture of the disease in question. There seems, however, to be a definite tendency for the majority of those who have to do with crop production to be extreme in their views as to the occurrence of and the amount of damage that diseases are causing on their crops. This large majority appears to be about equally divided into those who overemphasize and those who minimize the importance of a disease in a given year. Apparently, there is no purposely misleading intention whatsoever on the part of growers who give a distorted description of the disease situation. Those who emphasize their losses seem to believe that calling attention to reduction in yield will result in reports of shortage of the crop for that season and consequently in higher prices for their product. A typical response by one of this group when questioned about his crop is, "I've lost half my crop. Diseases are the worst I've ever seen." Those who minimize their losses apparently do so because of a feeling that to admit that they are having diseases at all is to admit that they are not good farmers. A typical remark from one in this category is, "I don't have any trouble at all. It's all in knowing how to grow good crops."

If one attempts to utilize county agents as his source of contacts with farmers he may possibly get a faulty picture of the disease situation in that community, because many of the county agents have a tendency to consult and work with those farmers who are most influential. Such farmers are usually better educated, own their farms, and use better seed and better cultural and disease control practices, consequently their losses are considerably below average for the county as a whole. On the other hand, with the Farm Security Administration agents, the reverse is likely to be the case, since the growers these agents work with are usually small scale farmers who operate on a shoestring, and although well supervised are under the influence of other conditions generally conducive to more than average disease losses. Even if one uses the plant pathologists in making his contacts he may get a biased view, inasmuch as the pathologist very naturally emphasizes the importance of the diseases with which he is working, at the expense of those with which he is less familiar. Hence the importance of stratifying a region and being certain that all strata and all types of conditions have been sampled. In this connection, of course, cognizance of natural strata and gradients must not be overlooked.

In making the above statements the writer is not suggesting that the views of any one of these groups should be disregarded, but rather that the views of all should be given consideration, and correction for bias made, if a true picture of the disease situation is to be reached.

It is a fact that the Plant Disease Survey collaborators, who are well trained and experienced pathologists, have submitted crop loss estimates that have varied greatly when the disease situations were comparable. If plant disease surveys are to be carried out on a large scale might it not be possible and advisable to establish a brief training period for participants, at which time standardized field trials in estimating disease losses on various crops would be carried out in fields where the actual loss could be determined? By this procedure it should be possible to establish the extent of individual variation involved in making crop loss estimates, which would permit evaluation of survey results to be submitted later on.

For many years pathologists in general and the Plant Disease Survey in particular have realized that accurate crop loss estimates would be of inestimable value to all persons engaged in crop production. With this objective in mind the writer has persistently and earnestly attempted to secure such information with selected crops, but experience has led to the inevitable conclusion that, for the most part, crop loss estimates that will bear the stamp of scientific approval can be obtained only if one is dealing with diseases that cause complete loss, especially on crops planted in rows that permit random sampling and the making of counts; or they may be arrived at in cases where it is possible to have a check crop, either a resistant variety or one with a disease that can be controlled, growing adjacent to the field being surveyed. Generally speaking, however, because of human vagaries and the extremely complex manner in which plant diseases

manifest themselves, we shall have to await the refinement of techniques and much research on the standardization of survey methods before crop loss estimates on a nation-wide basis will be much more than a good guess. So far Mother Nature has not revealed the magic wand which one can wave over a field and come up with the percentage of disease loss.

Admittedly, carefully considered crop loss estimates, even though they are only approximations not based on accurate counts or comparisons, are probably better than none at all provided they are not taken too seriously. But if they are used to the extent of determining appropriation of public funds we should either meet the challenge and improve their quality, thus putting ourselves in a position to defend their validity, or else admit their shortcomings. To the uninformed who take them at face value, crop loss estimates are very impressive but equally dangerous.

Plant disease surveys, of course, have other important functions than that of estimating crop losses, (this to be dealt with in a future article) and it is believed that the more specifically the objectives can be defined the more useful will be the information obtained. The writer's personal belief is that they have great potential value and that by them we can best secure basic pathological information essential to research and extension workers. On the other hand it should be realized that there are perhaps equally definite limitations as to what they can accomplish.

DIVISION OF MYCOLOGY AND DISEASE SURVEY

OBSERVATIONS ON BLASTING OF ONION SEED HEADS IN IDAHO

Earle C. Blodgett

Onion seed production in southwestern Idaho has increased rapidly during the last few years. In 1942 over 394,000 pounds were harvested on slightly over 1100 acres.[1] Although no definite figures are available, the production in 1943 and 1944 was considerably increased. The yield of seed per acre, however, has in many cases been very sharply reduced by a condition known as blasting, which has been observed for many years and is well known for its erratic appearances. The usual explanation has been that the injury was due to thrips, which are very common in severe outbreaks on both bulb and seed crops in southwestern Idaho.

From July 1943 to May 1945 the writer was connected with the Emer-

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[1] This information was furnished by Richard C. Ross, Agricultural Statistician, U.S.Department of Agriculture, Boise, Idaho.

gency Plant Disease Prevention Project, U.S. Department of Agriculture, and had an opportunity to observe a great many fields of different vegetable seed crops in many sections of the State. Blasting of both carrot and onion seed heads was regarded as quite common and accounted for severe losses in some cases (2; 3; 1). The symptoms of onion seed head blasting may be described as follows:

After what appears to be normal bloom of the individual flowers, a few, many, or practically all will fail to set seed and instead of filling out will wither and blast. One of the most interesting facts is that of two, or more, seed stalks from the same bulb, one or more of the heads may be almost perfectly filled out while the rest may show slight or complete injury. There may also be degrees of damage showing up as blasting of partially filled seed. Those so affected form only light, shriveled seed which are removed in harvesting or cleaning. It has been claimed that in some cases heads are more severely blasted on the north side, although the writer has not observed any clear cut cases.

Attention has already been called (2; 3; 4), to the problem of blasting of carrot seed heads and the conclusion that the bacterial blight disease caused by Xanthomonas carotae is largely responsible for the condition.

A very interesting set of circumstances, however, involving both carrot and onion seed head blasting was observed in plantings at Moscow, Idaho during 1943, 1944, and 1945. Additional observations were made during the period on plantings in widely separated areas of the State.

In 1943 at Moscow, one acre of carrots and about one-third acre of onions were grown in the same patch except that two rows of table beets for seed separated the plantings. There was no blasting of either carrot or onion seed heads, and no bacterial blight of carrots was observed. Both seed lots were hand harvested and hand threshed so there was good opportunity to observe blasted heads and bacterial exudate in the carrots if they had been present.

In 1944 about four acres of seed onions were grown in six separate patches, two of which, separated from the others by about three miles, were planted with seed in rows 18 inches apart. Only traces of seed head blasting were observed in five patches, but over 50 percent occurred in one patch which was almost completely surrounded by a carrot seed planting and consisted of six rows of onions left in place in rows 18 inches apart while the rest of the field had been dug and the bulbs either fall or spring planted in the other four patches. The seed stock was therefore not the cause of any difference. Two patches were adjacent to about equal-sized plantings of caraway for seed.

The significant fact was the similarity between the blasting of the onion seed heads at Moscow and in southern Idaho. Thrips were not at all prevalent in the planting at Moscow at any time of observation and caused only very slight leaf and stalk damage.

The carrots in this planting were severely blasted, with the damage estimated at about 30 or 40 percent. Bacterial cankers and exudate were prevalent. It was observed, also, that Lygus bugs were very abundant on the carrots, and some connection between these insects and incidence of bacterial blight on carrots and of onion seed head blasting was considered possible. Field sweepings were made and the specimens submitted to specialists for identification. The predominant insects present were Lygus hesperus and L. elisus.

Close examination in this planting also revealed that some of the blasted onion seed heads were borne on stalks that were affected in various degrees by light, punky areas on which a fungus was sporulating abundantly. Collections of affected material were sent to Dr. W. W. Ray, Mycologist, of the Emergency Plant Disease Prevention Project, Stillwater, Oklahoma, who isolated Botrytis allii consistently from the cankered areas. In some cases the diseased area involved the tissue at the base of the head and the pedicels. Similarly affected seed stalks and blasted heads were collected in a planting at Burley, and in July 1945, Dr. Glenn KenKnight collected similarly diseased onion stalks near Caldwell. Some of these stalks also showed the presence of downy mildew, a disease very uncommon in Idaho.

No inoculations were attempted but it is believed that in many cases the blasting of the seed heads was directly due to the injury to the stalk caused by Botrytis, although the writer is not familiar with any reference in the literature describing this type of fungus damage. The color changes upon maturity of the seed stalks tend to mask this form of injury.

Root rot, popularly called "pink root", was found in widely separated areas, and in some fields in southern Idaho caused severe loss of bulb onions after harvest. Dr. Ray consistently isolated Fusarium moniliforme from the specimens submitted. In many cases where loss of seed bulbs was severe, examination showed both Fusarium and especially Botrytis as causing the rot. In no field examined, however, was there evidence that loss of stand from these bulb rots had any correlation with the amount of blasting. It seems likely that when Botrytis infection of stalks and heads occurs the extent of injury is dependent largely on the amount of inoculum present and on favorable weather conditions.

In 1945 the strip planting of onions at Moscow where severe blasting had occurred was retained for the second year and seeded again. Squash and potatoes replaced the carrot planting. The other three nearby plantings of onions were kept and volunteered a good yield while another patch half seeded to seed and half spring planted with bulbs from the same patch also yielded very well.

The same onions that blasted in 1944 so severely showed practically no damage in 1945 and no typical blasting was observed in any of the other patches. In 1944 a planting at Burley, south central Idaho,

showed severe blasting but the leaf and stalk damage due to thrips was not present. Some stalks showed injury by Botrytis.

Discussion. It is impossible, of course, to conclude finally about the cause of onion seed head blasting on the basis of the experiences and observations reported but the following ideas seemed justified:

1. That onion seed head blasting was not caused solely by thrips damage.

2. That it probably was not due to root rot organisms.

3. That it was not due in the case mentioned to certain seed stocks or to type of bulbs or to method of handling in storage or in culture.

4. That it was not due to extremes of soil mosture or of air temperature.

It is of course possible that blasting of onion seed heads, as it frequently occurs in Idaho, may be caused by any one or any combination of several factors. The conditions observed mainly at Moscow and substantiated by observations in southern Idaho point strongly to the probability that blasting can be caused by conditions other than those generally considered responsible.

It is regarded as possible that Lygus bugs may be directly connected with blasting of the onion seed heads. The bacterial exudate in the infected carrots may have tended to increase the attraction of these insects to the carrots and the close preximity of the plantings made the transfer of the insects from carrots to onions very likely. That Lygus bugs can cause a similar type of damage to seedling crops, such as beans, alfalfa, and clover is quite generally recognized. It is not unlikely that part of the damage to carrot seed heads is also due to these insects.

So far as is known there is no published information as to the cause of onion seed head blasting and this note is to present evidence that Lygus bug damage and stalk injury from Botrytis might be involved.

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OBSERVATIONS ON MISSISSIPPI TOMATO DISEASES DURING 1945[1]

L. P. McColloch[2], H. H. Foster[3], and J. M. Lutz[4]

Unfavorable weather in the Copiah County, Mississippi area constitutes the greatest hazard in the production of "green-wrapped" tomatoes. The writers reported (PDR 28 (30): 940-944, 1944) on the tomato diseases in Mississippi during 1944, and similar observations are reported here for 1945. Both years had periods of unfavorable weather, which aggravated the disease problem to very serious proportions. Although the 1945 tomato shipping season opened with better prospects than the previous year, it closed quite as unsatisfactorily to both grower and shipper.

The climatological data shown in Table 1, recorded at Crystal Springs, Mississippi, cover the season shortly following the time plants were set in the field.

The cool, relatively wet spring that produced the largest cabbage

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1 Contribution from the Division of Fruit & Vegetable Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, United States Department of Agriculture, Beltsville, Maryland. In cooperation with the Truck Crops Branch Station, Mississippi Agricultural Experiment Station, State College, Mississippi. Published with the approval of the Director as Journal Article No. 108, New Series, Mississippi Agricultural Experiment Station.

2 Assistant plant pathologist, Division of Fruit & Vegetable Crops and Diseases, Beltsville, Maryland. Reporting on diseases in the handling and marketing of Mississippi tomatoes.

3 Plant Pathologist, Mississippi Truck Crops Branch Experiment Station, Crystal Springs, Mississippi. Reporting on seedbed and field diseases.

4 Physiologist, Division of Fruit & Vegetable Crops and Diseases, U.S. Horticultural Field Station, Meridian, Mississippi.

Table 1. Climatological Data Recorded at Crystal Springs, Mississippi by the U. S. Weather Bureau

Months reported 1945	Mean °F	Departure from normal °F	Lowest °F	Total inches rainfall	Departure from normal	Number days with rain
April	67.6	+2.9	40.0	5.52	+0.34	10
May	70.8	-1.4	43.0	3.98	-1.36	7
June	79.4	+0.2	62.0	7.16	+2.86	9

crop in Mississippi's history was definitely unfavorable for a healthy tomato crop. The Mississippi Truck Crops Station received numerous reports of diseased tomato plants and fruit during the spring season.

Collar rot or stem girdling (Alternaria solani (Ell. & Mart.) Jones & Grout), together with some leaf spotting, was frequently reported by farmers throughout the county and adjoining area. On occasional survey trips this fungous disease was commonly found in tomato seed beds and cold frames. Early in the season plant stands in certain tomato fields were observed to be poor and uneven due, in large part, to the Alternaria collar rot which killed many plants. Microscopic examination of diseased leaves and stems always showed Alternaria spores in abundance.

The early blight fungus (Alternaria solani) continued to be the principal parasite inducing defoliation during the growing season. At first the disease developed somewhat slowly. Rainfall during April was approximately 5.5 inches, followed by nearly 4 inches in May. However, during June a little over 7 inches of rain fell; of this amount 6.25 inches fell between June 11 and 15. During June, defoliation of tomato vines in the Experiment Station plots and in many commercial fields developed rapidly, exposing fruit to sunscald.

Alternaria fruit spot caused by Alternaria solani was frequently observed in field plots at the Mississippi Truck Crops Experiment Station and at commercial packing sheds. Tomato fruit infection was more prevalent during the latter part of the shipping season following abundant and severe early blight infection of tomato foliage. The Alternaria fruit spot usually occurred near the stem end of the fruit and on fruit showing some pink color. It is believed that this disease was of definite commercial importance in reducing the quality and value of the 1945 tomato crop.

Septoria lycopersici Speg. was observed to induce defoliation in only one plot at the Mississippi Truck Crops Station. During June both Septoria and Alternaria were readily observed on foliage from this plot, in which tomatoes had been grown for a number of years.

Few growers use modern preventive control measures and the occasional

farmer who does spray or dust his tomato crop seldom does so until the disease approaches epidemic proportions. Such belated control measures are of relatively little value.

Following the heaavy rains of June 11 to 15 many of the shippers in the Crystal Springs area, remembering their shipping losses of 1939 and more recently in 1944, closed their sheds until June 16 or later.

The late blight fungus (Phytophthora infestans (Mont.) DBy.) was not observed during the 1945 season. This disease was of economic importance in 1944, occurring on both foliage and fruit.

Buckeye rot (Phytophthora parasitica Dast.), closely related to late blight and frequently similar in fruit symptoms, was of major importance in 1945. This soil-borne disease attacks only the fruit, usually infecting tomatoes lying on or near the soil. Following the heavy rain of June 11 to 15 rotted fruit affected with buckeye rot were observed at packing sheds. It seems probable that this disease may have been responsible for a high percentage of fruit decay occurring in cars shipped during this period. Buckeye rot was not observed at the Truck Crops Station during the spring season but did appear in the fall experimental plots during October following a rather heavy, driving rain.

Two bacterial diseases, bacterial spot, caused by Xanthomonas vesicatoria (Doidge) Dowson (Bacterium vesicatorium Doidge), and bacterial speck, caused by Bacterium punctulans Bryan, were of commercial importance and were frequently observed on mature green tomatoes unloaded at packing sheds. Cool, rainy weather when the blossoms were setting fruit was no doubt very favorable to the development of these two diseases. This past season many tomato fruits at the Truck Crops Station were infected with one or the other of these bacterial diseases. Abundant infection on certain lines and varieties suggested a high degree of susceptibility. Many of the fruits infected with bacterial spot showed unusually large lesions, indicating infection early in the season.

Phoma rot (Phoma destructiva Plowr.) was observed in the field on fruit showing some pink color, and also was frequently observed at the packing sheds on partially ripened fruit. It is believed that during the past season the Phoma rot disease was of commercial importance in the field as well as during transit.

Southern stem blight, caused by Sclerotium rolfsii Sacc., was occasionally observed during the 1945 spring season but apparently was of minor economic importance.

Fusarium wilt, caused by Fusarium bulbigenum var. lycopersici (Brushi) Wr. and Reinking, usually does not appear as a serious disease when the Rutgers variety (moderately resistant under field conditions) is grown. Owing to the relatively cool spring, Fusarium wilt symptoms did not appear at the Truck Crops Station until late in

the shipping season, even on a heavily infested wilt plot.

The root knot disease of tomato, caused by the nematode Heterodera marioni (Cornu) Goodey, has not been observed to be markedly severe or of economic importance where proper rotation of vegetable crops with a resistant crop, such as corn, has been maintained.

Common mosaic of tomato appeared early in the season on several of the Station plots. When this disease becomes widespread early in the life of the tomato plant the yield is greatly reduced. Yellow mosaic has occasionally been observed, usually mixed with the common mosaic and showing as yellow blotches among the darker green portions of the mottled design of the common mosaic. These virus diseases appear to be spread primarily through handling of plants, as in transplanting, suckering, staking, and tying.

Leaf mold, caused by Cladosporium fulvum Cke., occurred on greenhouse tomato foliage during the winter and early spring. A few breeding lines appeared resistant and failed to develop symptoms. This same disease was observed in the fall experimental plot for a short period in September, when rather high temperature and humidity prevailed. Insofar as is known leaf mold has not, as yet, been observed and reported on tomato during the spring crop season.

Gray mold rot, caused by Botrytis sp., was observed in the greenhouse during the spring months. The disease appeared in severe degree whenever plants produced an abundant and dense growth of low foliage which aided in maintaining relatively high humidity and excluded much of the sunlight.

Phomopsis sp., which caused a rapid but rather firm type of decay in tomatoes was isolated a number of times from decaying fruit.

Fruit condition in shipping test. Plans for a rather extensive program of shipping tests this year were disrupted because very few tomatoes from this area were shipped to the Washington, D. C., market. Consequently only one test is reported here.

The test car was shipped from Crystal Springs, Mississippi June 7, 1945, when weather conditions were favorable. The 700 30-pound lugs of wrapped tomatoes made a solid carload 5 lugs wide and 5 high. The car was equipped with circulating fans and was initially iced at Jackson, Mississippi. It moved with vents closed to Memphis, Tennessee. From there it moved under standard ventilation to Washington, D. C., where the 6 test lugs were removed and the fruit observed under ripening conditions until it became firm ripe.

Abrasions caused by the picking containers and sand scarring were numerous, but the lack of rain preceding the harvest, the maturity of fruit, and the fruit quality at the start of the season permitted the fruit to ripen with a minimum of loss from decay.

Table 2. Transit temperatures transcribed from Ryan thermometer charts

Position in car	Time Intervals												
	5PM 6/7	12M 6/7	12N 6/8	12M 6/8	12N 6/9	12M 6/9	12N 6/10	12M 6/10	12N 6/11	12M 6/11	12N 6/12	12M 6/12	10AM 6/13
Top quarter-length	94	94	90	78	76	74	75	77	76	75	73	75	82
Mid quarter-length	90	90	78	-*	--	--	--	--	--	--	--	--	--
Bottom quarter-length	92	90	90	78	76	76	76.5	78	78	78	75	77	78

*Incomplete recording.

Table 3. Physical condition and ripening data for samples from one car of Mississippi tomatoes.

Position of test packages[a]	Total fruits in test	Arrival condition					Ripening record		Total decayed
		Wounded	Pressure bruises[b]	Breaking color	Firm ripe	Decayed	Firm ripe in 6 days	Decayed[c]	
	No.	%	%	%	%	%	%	%	%
1	199	21.1	5.0	27.1	7.0	1.5	83.4	0	1.5
2	198	10.6	4.0	28.3	7.6	2.5	86.9	1.0	3.5
3	198	21.2	6.1	24.7	5.1	2.0	88.4	.9	2.9

[a]Positions in car: 1 = top quarterlength; 2 = middle quarterlength; 3 = bottom quarterlength.
[b]None were crushed.
[c]All fruits were ripe in 8 days, none shrivelled.

About one-fourth of the fruits were breaking color when they arrived, but only 5 to 7 percent were firm ripe. The maturity of this fruit was good and was unusually uniform. After 6 days in the ripening room at 70° F and 85 percent humidity, about 85 percent of the fruits were firm ripe. All fruits had ripened by the eighth day.

The total decay was slight and was caused by bacterial soft rot. At the time of arrival there was an average of 2 fruits per lug with this decay. This was enough to stain the exterior of the lugs and gave an impression of more rot than was actually present. The temperature in the car was unified by the fan, but was too high for best results as shown in Table 2. We believe that lower transit temperatures would result in less bacterial soft rot or retard its development and thus prevent stained lugs arriving at the terminal markets. This could probably be attained by delaying the opening of the vents of initially

Table 4. Fruit condition found in 8 cars of Mississippi tomatoes inspected[a]

City unloaded	Date inspected	Ripeness: Firm ripe	Ripeness: Turning	Ripeness: Mature green	Shoulder rub: Range	Shoulder rub: Average	Wormy fruit	Decay: Range	Decay: Average	Remarks
	June	%	%	%	%	%	%	%	%	
Atlanta, Ga.	11	10	20	70	--	--	--	3-6	3	Mostly bacterial soft rot in injured and wormy fruit
Cincinnati, Ohio	12	12	20	65	--	6	1	4-8	3	Mostly Alternaria and Phytophthora rot
Atlanta, Ga.	13	0	12	88	--	--	2	--	3	Bacterial soft rot following worm injury
New York, N.Y.	20	20	35	35	6-30	7	--	3-12	9	Bacterial soft rot and Alternaria
New York, N.Y.	20	0	20	70	3-15	8	--	3-15	9	Alternaria and bacterial soft rot
Pittsburgh, Pa.	23	0	10	65	--	8	--	4-55	25	Mostly Phoma rot, a few bacterial soft rot
Pittsburgh, Pa.	26	15	20	55	--	7	--	5-20	12	Decay caused by Phoma and bacterial soft rot
New York, N.Y.	27	10	20	65	3-33	20	--	3-10	5	Bacterial soft rot

[a] Data furnished through the courtesy of Mr. E. E. Conklin, Chief, Fresh Fruit & Vegetable Standardization and Inspection Division, Production and Marketing Administration, U. S. Department of Agriculture.

iced cars, and possibly by re-icing in transit on long hauls. This would safeguard against extremely hot weather at terminal markets such as occurred in Washington when this car arrived.

An examination of the 12 fruits decayed by bacterial soft rot suggested that 8 were infected through injuries and 4 at the stem scar. Three of these fruits in an early stage of decay had live tomato fruit worms feeding about the stem end.

Since observations on the Washington market were so limited additional data were gathered from U. S. Department of Agriculture inspection certificates issued at unloading points. Table 4 shows a brief cross-section of information obtained from some of the markets where tomatoes required inspection. It was likely that 4 to 8 days elapsed between the time of harvest and the date of inspection at the destination. Evidently the heavy rains between June 11 and 15 influenced the extent of decay of fruit harvested during that time. Here again it is noted that bacterial soft rot was associated with worm injury, other fresh wounding, and old field blemishes.

U. S. BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, AND MISSISSIPPI AGRICULTURAL EXPERIMENT STATION.

NUT DISEASES IN OREGON IN 1945

P. W. Miller

PERSIAN (ENGLISH) WALNUT DISEASES

Walnut blight (Xanthomonas juglandis (Pierce) Dowson) was widely distributed in Western Oregon in 1945; loss, however, was not so great as in the three preceding years. For the State as a whole, it is estimated that about 10 percent of the potential walnut crop in non-sprayed orchards was destroyed by this disease.

Mushroom root rot (Armillaria mellea Vahl) caused the death of a number of Persian walnut trees in Oregon in 1945. This disease appears to be on the increase. During the preceding decade not over a dozen trees were found infected with mushroom root rot while in 1945 over 50 trees were found to be dying from this disease. In one orchard alone, near Gaston, several acres of trees were found to be infected.

Ring spot (Ascochyta juglandis Bolt.) was found on the foliage in a number of widely distributed Persian walnut orchards in Western Oregon in 1945. It was also found on the nuts in one orchard in Jackson County. This is the first time that this disease has been found attacking the nuts. In this particular orchard, the disease was of economic importance, causing a loss of nuts and affecting the quality

adversely. In other localities, however, it was of little, if any, economic importance as only an occasional leaf on a tree was infected.

Downy spot (Microstroma juglandis (Berng.) Sacc.). This leaf spot occurred in limited amounts in a few orchards in the Willamette Valley in 1945. It was of no economic importance, however, since it did not cause any defoliation or decrease the functional leaf area to any significant extent.

Leaf scorch (non-parasitic). This disorder occurred to a greater or less extent in most Persian walnut orchards in the State. In some orchards on certain soil types, it was of considerable economic importance, as it caused a significant decrease in the functional leaf area from death of the affected areas and from premature defoliation. Timely applications of borax to the soil appreciably decreased the incidence of this disorder.

"Black-line" (girdle) of grafted walnuts (non-parasitic). This disorder caused the death of a considerable number of grafted walnut trees in Oregon in 1945. All of the trees found affected belonged to the Franquette variety and were grafted on California black walnut (Juglans hindsii Sarg.) rootstocks or on hybrids of other species with this one.

FILBERT DISEASES

Bacterial blight (Xanthomonas corylina (Miller et al.) Dowson occurred to a greater or less extent in practically all filbert orchards in the State. The disease was not generally so severe, however, as in the previous two years.

Mildew (Phyllactinia corylea (Pers.) Karst.) was widely distributed in Oregon in 1945, occurring in varying amounts in practically all filbert orchards in the State. The disease was of no economic importance, however, as it did not make its appearance until very late in the season. The infected leaves retained their normal green color until the end of the season and persisted on the trees until time of normal leaf fall.

Leaf scald (non-parasitic) occurred to a greater or less extent in practically all filbert orchards in the State in 1945. The disorder was worse in orchards located on relatively shallow soils with limited reserves of moisture and fertility. Under such conditions, it decreased the functional leaf area appreciably from death of affected parts and from premature defoliation.

Filbert shrivel (non-parasitic). This disorder of the nuts was widely distributed in Oregon in 1945, occurring in varying amounts in practically every filbert orchard in the State. However, the loss from this disorder was not so great as in 1944.

DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, CORVALLIS, OREGON.

A NOTE ON THE DISTRIBUTION OF BLACK ROT OF ORCHIDS

Donald P. Limber

Under the name "black rot of orchids" an account of a disease of orchids from Cantareira (apparently Brazil) was given by Rossetti.[1] She states that the same or a similar disease of Cattleya and Vanda has been reported in Puerto Rico, and of Stanhopea saccata in an unnamed locality. Saccardo[2] records Pythium debaryanum Hesse on Stanhopea saccata in Germany. A comparison of these reports with the plant-disease interception records (unpublished) of the Bureau of Entomology and Plant Quarantine shows that these data materially extend the areas in which the disease is known to be present. A summary of these data follows:

Country	Number of interceptions	Host
Venezuela	6	Cattleya (from the wilds)
Venezuela	1	Epidendrum? (from the wilds)
Colombia	1	Cattleya (from the wilds)
Cuba	1	Oncidium (probably wild)
England	4	Cattleya (hothouse grown)

The name black rot is used here to designate a disease caused by pythiaceous fungi of more than one species. Rossetti, in the paper cited, does not identify the organism; she cites similar diseases caused by fungi of the genera Pythium and Phytophthora. Apparently two species are included in the Bureau of Entomology and Plant Quarantine interceptions. The evidence for this conclusion is that in four of the interceptions of black rot, instead of the more usual pythiaceous fungus with ovate, papillate sporangia, a phycomycete was secured that had smaller, nearly spherical sporangia. Three of this type were obtained in isolations from hothouse-grown plants from England. The other interception from England may also have been of this type, but the point cannot be ascertained from the record at this date.

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE, AGRICULTURAL RESEARCH ADMINISTRATION

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[1] Rossetti, V. [Black rot of orchids.] Biologico 9: 201-205. 1943. [Abstract in Rev. Appl. Mycol. 23: 64. 1944.] Though the country is not named, the evidence indicates Brazil. Biologico is published at Sao Paulo, Brazil. A town or locality called Cantareira is in the State of Sao Paulo. In the abstract, however, the source of the material studied is given as "Buenos Aires", but there is nothing in the original article to support this statement. The av available atlases list no Cantareira in Argentina.

[2] Saccardo. Sylloge Fungorum 12: 651. 1897.

DISEASES OF VEGETABLE CROPS DURING JANUARY IN PALM BEACH AND BROWARD COUNTIES, FLORIDA

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BEANS Powdery mildew, (Erysiphe polygoni) has been observed in two bean fields on the East Coast. Prevalence was only 2 or 3 percent in each case with no loss in yield attributed to mildew at present.

A very slight amount of bean rust (Uromyces phaseoli var. typica) was observed for the first time this year on January 24th in the Coast area. It occurred in one field near West Palm Beach.

Although halo blight (Phytomonas [Pseudomonas] medicaginis var. phaseolicola) has been noted in slight amounts in a few scattered Coastal fields, very little actual damage has been caused by it. However, one poorly cared-for field was noted in January in which a moderate to heavy infection was present on every plant examined. The plants were past maturity before the disease was severe.

Southern blight (Sclerotium rolfsii) has not increased appreciably in the East Coast fields during the last two months. A few scattered affected plants can be found in most fields but there has been no particular "build-up" of the disease this season.

Watery soft rot (Sclerotinia sclerotiorum) has increased somewhat in the south-eastern part of Palm Beach County during January. The latter part of December a serious outbreak of watery soft rot developed in the Pompano area of Broward County and extended a short distance North into Palm Beach County. Following the outbreak, weather conditions have not favored rapid development of the disease and its progress has been very slow in Palm Beach County. However, the most seriously affected field seen in the County averaged 10 percent diseased plants. Losses have been heavy in Broward County.

Root rots (Rhizoctonia spp. and others) have not proved a serious factor to the Coastal bean crop so far this season. Affected plants are omnipresent but average yields have been maintained. Evidence of resistance to root rot has been observed in a few varieties.

The acreage planted to beans in the Everglades has been at the minimum point during January. Root rot has been the only disease reported on this limited acreage during the past month.

CABBAGE Black rot (Phytomonas [Xanthomonas] campestris) has been extremely destructive in many cabbage fields in the Everglades. One grower is known to have had a total loss on more than 300 acres of cabbage. The probability that much of the seed planted this year was infected is indicated by the occasional occurrence of disease-

free stocks in close proximity to severely diseased cabbage.

Powdery mildew (Peronospora parasitica) has been present but less destructive than usual.

Leaf spot (Alternaria brassicae) was noted in two fields early in the month. It caused considerable damage to the outer leaves, and in one case had affected the wrapper leaves of the head.

CELERY A period of unseasonably warm weather in January resulted in considerable celery becoming pithy. Yields were reduced where it became necessary to strip off the outer petioles which became pithy.

Early blight (Cercospora apii) developed more than is normal for January because of the higher temperatures. Control of this disease with Dithane-zinc-lime sprays was defective in some fields where rains followed spraying, or where the interval between applications was more than one week.

Pink rot (Sclerotinia sclerotiorum) was found in one field of celery in the Everglades. This is the first occurence of the disease in the area which has been confirmed. The grower reported he had seen it in the same field for four years. The loss was less than one percent.

Mosaic (virus) developed severely over a half acre area at the center of one field. Petiole discoloration was present to the extent of 40 to 50 percent of the plants in two large celery fields.

EGGPLANT Wilt (cause undetermined) caused death or severe wilting of 50 percent of the plants in a half-acre field.

PEAS Pod rot (Rhizoctonia sp.) affected two-thirds of 1200 hampers of Little Marvel peas grown near Port Myaca (Martin County). The grower was forced to sell these for the cost of harvesting (90 cents), whereas good peas were selling at $4.60 per hamper. Soil contact and weedy fields are considered contributing factors in the development of pod rot.

POTATOES Potatoes harvested during January were affected with late blight tuber rot (Phytophthora infestans). The principal losses occurred in fields not killed by the December 1 frost and not sprayed after December 15. Clean tubers were harvested from frosted fields and where spraying continued until the crop was harvested.

Scab (Actinomyces scabies) was found to be severe in a field planted with hot-formaldehyde treated seed on virgin muck. The disease was more severe where the land was first broken this fall, than where it had been prepared in the spring. Most of the potatoes harvested have had less scab than usual.

Potato fields are a rarity on the Coastal area of Palm Beach County, although a few potatoes are grown on a home garden scale. One planting in West Palm Beach was observed on January 25th in which late blight (Phytophthora infestans) had recently gained such a start that diligent but delayed spraying was not effective in saving the crop. Early blight (Alternaria solani) was also quite prevalent on all of the plants.

PEPPER Bacterial spot (Xanthomonas vesicatoria) appeared in a 10-acre field of young Neapolitan pepper and was causing some defoliation.

Mosaic occurred in the amount of 20 percent infection in some bell pepper fields and local spread was observed. Aphids were very abundant on the peppers.

SQUASH Blossom-end fruit rot (apparently Rhizopus sp.) is present and extensive in most fields on the East Coast. According to growers the incidence of the disease is particularly serious this season.

Mosaic (virus) was seen in two fields on the Coast during January. From 1 to 2 percent affected plants were present in each field. In the Everglades area an average of 30 percent mosaic was observed in some of the younger squash fields. One 12-acre field was disced up. There was evidence in this field of spread from weeds, the infection ranging from 70 percent in the worst area to 20 percent in the rest of the field.

One field of squash that is under observation on the East Coast is apparently 100 percent affected with root-knot nematodes. This field was planted to okra, a very susceptible plant, last year. The operator estimates that root-knot has reduced the present yield of squash by 35 to 40 percent.

TOMATO Fruit rot (Phytophthora infestans) occurred on a few small plantings of tomatoes, but foliage infections were not severe.

Early blight (Alternaria solani) caused defoliation of tomatoes in gardens.

Mosaic was observed in one small planting.

EVERGLADES EXPERIMENT STATION, Feb. 1, 1946

NEW SUSCEPTS FOR OAK WILT: A CORRECTION

Dr. S. M. Dietz of Iowa State College calls attention to the fact that both post oak and shingle oak (Quercus stellata and Q. imbricaria), said to be new host records for Chalara quercina in an earlier issue (PDR 30: 32. Jan. 15), had been reported as attacked by this fungus in the Report on Agricultural Research, Part 1, of the Iowa Agricultural Experiment Station, June 30, 1944.